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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/722,452	11/28/2000	Junichi Ichikawa	053588-5004	4723

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EXAMINER

CHERRY, EUNCHA P

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/722,452

Applicant(s)

ICHIKAWA, JUNICHI

Examiner

EUNCHA P. CHERRY

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koide in view of Saito.

Koide discloses a light scanning method comprising the steps of:

(a) making plural light beams emitted from a light source (Fig. 2A, 21a and 21b) incident at least onto reflection surfaces of a deflector (27) in a mutually parallel state in a direction orthogonal to a main scanning direction (column 4, lines 16-17 and see Figs. 2B(1), 2B(2), 3);

(b) deflecting the plural light beams by said deflector (column 4, lines 17-20); and

(c) focusing the plural light beams deflected by said deflector on a surface to be scanned (46a, 46b).

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Koide discloses a light scanning device which deflects plural light beams emitted from a light source by making the light beams incident on reflection surfaces of a deflector, and scans the surface to be scanned simultaneously by the plural light beams deflected by the deflector, the device comprising:

(a) a first optical system for making the plural light beams incident at least onto the reflection surfaces of the deflector in a mutually parallel state in a direction orthogonal to a main scanning direction (Fig. 2A, pre-scanning elements 22a, 22b, 23a, 23b, 24a, 24b, 25); and

(b) a second optical system for focusing the plural light beams, which were deflected by the deflector, onto a surface to be scanned.

The second optical system focuses the plural light beams deflected by said deflector on the surface to be scanned, while setting a conjugate relation between the reflection surfaces of the deflector and the surface to be scanned (column 4, line 56 through column 5, line 4).

The second optical system comprises an $f\theta$ optical system having power for condensing only in the main scanning direction, a first cylinder optical system having power for condensing in the direction orthogonal to the main scanning direction, and a second cylinder optical system having power for condensing in

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the direction orthogonal to the main scanning direction (see Fig. 2A) main scanning direction. The light source is a vertical cavity surface emitting laser diode array having plural light emission points disposed in a two-dimensional arrangement (column 3, lines 58-63). The deflector is a rotary polygonal mirror rotating at a predetermined speed (column 4, lines 4-6).

Koide does not disclose an afocal relation between the reflection surfaces of the deflector and the surface to be scanned in the direction orthogonal to the main scanning direction.

Saito discloses an afocal relation between the reflection surfaces of the deflector and the surface to be scanned in the direction orthogonal to the main scanning direction (column 4, lines 1-14). It would have been obvious to one of ordinary skill in the art to use the teaching of afocal scanning system in the post scanning lines for the purpose of expanding a light flux diameter in main scanning direction and converging a light in subscanning direction.

3. Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koide in view of Saito, and further in view of Sakuma et al.

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Koide in view of Saito discloses the claimed invention as set forth above except that a light source emits the plural light beams in a mutually parallel state, and said first optical system sets an afocal and conjugate relation between said light source and the reflection surfaces of said deflector, the first optical system comprises a collimator lens for making the light beams emitted from the light source as divergent luminous flux into a substantially parallel luminous flux, and a cylinder lens having power for condensing into the direction orthogonal to the main scanning direction, and focusing the light beams made into substantially parallel luminous flux by the collimator lens as a line which is long in the main scanning direction on the reflection surfaces of the deflector, the collimator lens and cylinder lens are disposed such that a focal position at a light beam advancing direction downstream side of the collimator lens substantially coincides with a focal position at a light beam advancing direction upstream side of the cylinder lens.

Sakuma et al discloses a scanning device having a light source (1) emits the plural light beams (column 4, line45) in a mutually parallel state, and said first optical system sets an afocal and conjugate relation between said light source and the reflection surfaces of said deflector (Fig. 5, 2 and column 4, lines 64-66), the first optical system comprises a collimator

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lens (in abstract, line 4) for making the light beams emitted from the light source as divergent luminous flux into a substantially parallel luminous flux, and a cylinder lens (2b1, 2b2) having power for condensing into the direction orthogonal to the main scanning direction, and focusing the light beams made into substantially parallel luminous flux by the collimator lens as a line which is long in the main scanning direction on the reflection surfaces of the deflector, the collimator lens and cylinder lens are disposed such that a focal position at a light beam advancing direction downstream side of the collimator lens substantially coincides with a focal position at a light beam advancing direction upstream side of the cylinder lens (see column 5, lines 1-19).

It would have been obvious to one of ordinary skill in the art to use the teaching of afocal scanning system for the purpose of expanding a light flux diameter in main scanning direction and converging a light in subscanning direction.

Response to Arguments

4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

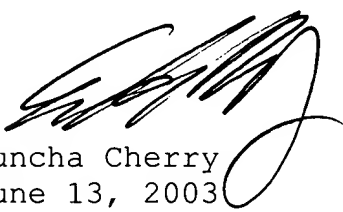
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Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUNCHA P. CHERRY whose telephone number is 703-305-0997. The examiner can normally be reached on M-F 6:30-4:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, CASSANDRA SPYROU can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.


Euncha Cherry
June 13, 2003